Claims

1. Method of transmitting at least one message between at least a first communication device (2, 4, 6, 8, 10) and at least a second communication device (12, 14, 16, 18, 20), via a communication channel (22) allowing at least voice messages to be transmitted between said first and said second communication devices, said at least one message including data being subdivided in a sequence of basic data units, said method comprising the following steps:

a. encoding each of the basic data units as unique signals (us_j), each unique signal (us_j) comprising a predetermined number of basic signals (b_i) each basic signal having a unique fixed frequency (f_i);

b. transmitting a sequence of unique signals (us_j) between said first and said second communication devices during a sequence of fixed time periods (t1, t2, t3, ...), any one of said sequence of unique signals (us_j) lasting at least one time period;

c. receiving and decoding said sequence of unique signals (us_j) into said sequence of basic data units;

wherein said data is transmitted in said communication channel at least during a period that said communication channel is also available for transmitting voice signals.

2. Method according to claim 1 wherein said basic signals (b_i) each have a predetermined amplitude (A_i).

3. Method according to claim 2 wherein each of said predetermined amplitudes (A_i) is unique.

4. Method according claim 2 or 3 wherein said communication channel has a noise level and each of said predetermined amplitudes is within a range of 10% above said noise level.

5. Method according to any of the preceding claims wherein each of said unique signals (us_j) lasts a plurality of said fixed time periods.

6. Method according to any of the preceding claims wherein said sequence of unique signals (us_j) comprises data identifying the first communication device transmitting said at least one message.

7. Method according to any of the preceding claims wherein each of said unique signals (us_j) has the same, fixed number of basic signals (b_i) derived from a predetermined set of basic signals (b_i).

8. Method according to any of the preceding claims wherein each of said unique signals (us_j) comprises a redundant set of basic signals (b_i).

9. Method according to any of the preceding claims wherein said message is a message identifying message and comprises at least one from the following set of data elements:

- a first identifier identifying a set of frequencies (f1, f2, f3, ...) from which each of the unique fixed frequencies is selected;
- a second identifier identifying which frequencies are used by the first communication device and which frequencies are used by the second communication device;
- a duration of each of the fixed time periods; and
- a request to change characteristics of transmission between said first and second communication device.

10. Method according to claim 2 wherein said message comprises at least the following data element: the predetermined amplitudes (A_i) of the basic signals (b_i).

11. Method according to claim 7 wherein said message comprises at least the following data element: the predetermined set of basic signals (b_i).

12. Method according to claim 1 wherein said first communication device transmits a first message comprising a request to change characteristics of transmission between said first and second communication device and said second communication device replies by transmitting a second message either confirming or denying said

request to change.

13. Method according to claim 12 wherein, if said request has been denied, said second message comprises a proposal for an alternative change of characteristics of transmission.

14. Method according to any of the claims 2 to 4 wherein each of the predetermined amplitudes of the basic signals (b_i) corresponds to an acoustic frequency characteristic of the human ear.

15. Method according to any of the claims 2 to 4 wherein each of the predetermined amplitudes of the basic signals (b_i) corresponds to acoustic frequency characteristics of said communication channel.

16. Method according to any of the preceding claims wherein step b comprises transmitting a dialling signal and said data is already at least partly transmitted together with said dialling signal.

17. Method according to any of the preceding claims wherein said second communication device comprises a telephone receiver and said message is filtered upon receipt such that said data does not reach said telephone receiver.

18. Transmitter (2, 4, 6, 8, 10) for transmitting at least one message to at least one receiver (12, 14, 16, 18, 20), via a communication channel (22) allowing at least voice messages to be transmitted, said at least one message including data being subdivided in a sequence of basic data units, said transmitter comprising telephone means (8), oscillator means (6) for producing a plurality of basic signals (b_i) each having a unique fixed frequency (f_i) and processing means (2) connected to said telephone means (8) and said oscillator means (6) and arranged for:

a. encoding each of the basic data units as unique signals (us_j), each unique signal (us_j) comprising a predetermined number of basic signals (b_i);

b. transmitting a sequence of unique signals (us_j) to said receiver during a sequence of fixed time periods (t1, t2, t3, ...), any one of said sequence of

unique signals (us_j) lasting at least one time period;

wherein said data is transmitted in said communication channel at least during a period that said communication channel is also available for transmitting voice signals.

19. Transmitter according to claim 18 arranged to provide each of said basic signals (b_i) with a predetermined amplitude (A_i).

20. Transmitter according to claim 19 arranged to provide each of said basic signals with a unique predetermined amplitude (A_i).

21. Transmitter according claim 19 or 20 wherein said communication channel has a noise level and said transmitter is arranged to provide each of said predetermined amplitudes within a range of 10% above said noise level.

22. Transmitter according to any of the claims 17 through 21 arranged to transmit each of said unique signals (us_j) during a plurality of said time periods.

23. Transmitter according to any of the claims 17 through 22 arranged to provide said sequence of unique signals (us_j) with data identifying said transmitter.

24. Transmitter according to any of the claims 17 through 23 arranged to provide each of said unique signals (us_j) with the same, fixed number of basic signals (b_i) derived from a predetermined set of basic signals (b_i).

25. Transmitter according to any of the claims 17 through 24 arranged to provide each of said unique signals (us_j) with a redundant set of basic signals (b_i).

26. Transmitter according to any of the claims 17 through 25 arranged to provide said message as a message identifying message with at least one from the following set of data elements:

- a first identifier identifying a set of frequencies (f1, f2, f3, ...) from which each of the unique fixed frequencies is selected;
- a second identifier identifying which frequencies are used by the first

communication device and which frequencies are used by the second communication device;

- a duration of each of the fixed time periods; and
- a request to change characteristics of transmission between said transmitter and said receiver.

27. Transmitter according to claim 19 arranged to provide said message with at least the following data element: the predetermined amplitudes (A_i) of the basic signals (b_i).

28. Transmitter according to claim 20 arranged to provide said message with at least the following data element: the predetermined set of basic signals (b_i).

29. Transmitter according to any of the claims 19 to 21 arranged to determine each of the amplitudes of the basic signals (b_i) on the basis of an acoustic frequency characteristic of the human ear.

30. Transmitter according to any of the claims 19 to 21 arranged to determine each of the amplitudes of the basic signals (b_i) on the basis of acoustic frequency characteristics of said communication channel.

31. Transmitter according to any of the claims 17 through 30 arranged to transmit a dialling signal in step b and said data already at least partly together with said dialling signal.

32. Receiver arranged to communicate with a transmitter according to any of the claims 17 through 31, said receiver comprising telephone means (18) and processing means (12) connected to said telephone means (18) and arranged for:

a. receiving a sequence of unique signals (us_j) from said transmitter during a sequence of fixed time periods (t1, t2, t3, ...), any one of said sequence of unique signals (us_j) lasting at least one time period, each unique signal (us_j) comprising a predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

b. decoding said sequence of unique signals (us_j) into a sequence of basic data units;

wherein said unique signals (us_j) are transmitted in a communication channel at least during a period that the communication channel is also available for transmitting voice signals.

33. Receiver according to claim 32 arranged to receive a first message from said transmitter, comprising a request to change characteristics of transmission between said transmitter and said receiver and to reply by transmitting a second message either confirming or denying said request to change.

34. Receiver according to claim 33 arranged to reply with a proposal for an alternative change of characteristics of transmission if said request has been denied.

35. Receiver according to any of the claims 32 through 34 comprising a telephone receiver and filtering said message upon receipt such that said data does not reach said telephone receiver.

36. Transceiver (2, 4, 6, 8, 10) arranged for transmitting at least one first message to at least one receiver (12, 14, 16, 18, 20), via a communication channel (22) allowing at least voice messages to be transmitted, said at least one first message including data being subdivided in a first sequence of basic data units, said transmitter comprising telephone means (8), oscillator means (6) for producing a plurality of basic signals (b_i) each having a unique fixed frequency (f_i) and processing means (2) connected to said telephone means (8) and said oscillator means (6) and arranged for:

a. encoding each of the basic data units as unique signals (us_j), each unique signal (us_j) comprising a predetermined number of basic signals (b_i);

b. transmitting a first sequence of unique signals (us_j) to said receiver during a first sequence of fixed time periods (t1, t2, t3, ...), any one of said first sequence of unique signals (us_j) lasting at least one time period;

wherein said data is transmitted in said communication channel at least during a period that said communication channel is also available for transmitting voice signals, said processing means (12) also being arranged for:

c. receiving at least one second sequence of unique signals (us_j) during a second sequence of fixed time periods (t1, t2, t3, ...), any one of said at least one second sequence of unique signals (us_j) lasting at least one time period and comprising a unique, predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

d. decoding said at least one second sequence of unique signals (us_j) into a second sequence of basic data units.

37. Computer readable medium comprising computer readable software allowing a communication device (2, 4, 6, 8, 10), after having loaded said software, to transmit at least one first message to at least one receiver (12, 14, 16, 18, 20), via a communication channel (22) allowing at least voice messages to be transmitted, said at least one first message including data being subdivided in a first sequence of basic data units, and to:

a. encode each of the basic data units as unique signals (us_j), each unique signal (us_j) comprising a predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

b. transmit a first sequence of unique signals (us_j) to said receiver during a first sequence of fixed time periods (t1, t2, t3, ...), any one of said first sequence of unique signals (us_j) lasting at least one time period;

wherein said data is transmitted in said communication channel at least during a period that said communication channel is also available for transmitting voice signals.

38. Computer readable medium according to claim 37 comprising computer readable software allowing said communication device (2, 4, 6, 8, 10), after having loaded said software, to:

c. receive at least one second sequence of unique signals (us_j) during a second sequence of fixed time periods (t1, t2, t3, ...), any one of said at least one second sequence of unique signals (us_j) lasting at least one time period and comprising a predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

d. decode said at least one second sequence of unique signals (us_j) into a second sequence of basic data units.

39. A computer data signal embodied in a carrier wave comprising computer readable software allowing a communication device (2, 4, 6, 8, 10), after having loaded said software, to transmit at least one first message to at least one receiver (12, 14, 16, 18, 20), via a communication channel (22) allowing at least voice messages to be transmitted, said at least one first message including data being subdivided in a first sequence of basic data units, and to:

a. encode each of the basic data units as unique signals (us_j), each unique signal (us_j) comprising a predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

b. transmit a first sequence of unique signals (us_j) to said receiver during a first sequence of fixed time periods (t1, t2, t3, ...), any one of said first sequence of unique signals (us_j) lasting at least one time period;

wherein said data is transmitted in said communication channel at least during a period that said communication channel is also available for transmitting voice signals.

40. A computer data signal embodied in a carrier wave according to claim 39 comprising computer readable software allowing said communication device (2, 4, 6, 8, 10), after having loaded said software, to:

c. receive at least one second sequence of unique signals (us_j) during a second sequence of fixed time periods (t1, t2, t3, ...), any one of said at least one second sequence of unique signals (us_j) lasting at least one time period and comprising a predetermined number of basic signals (b_i), each basic signal having a unique fixed frequency (f_i);

d. decode said at least one second sequence of unique signals (us_j) into a second sequence of basic data units.

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